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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,023	05/09/2007	Giuseppe Faita	10585.0013	6965

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EXAMINER

ECHELMMEYER, ALIX ELIZABETH

ART UNIT	PAPER NUMBER
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1729

MAIL DATE	DELIVERY MODE
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10/25/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,023	Applicant(s) FAITA ET AL.	
	Examiner Alix Elizabeth Echelmeyer	Art Unit 1729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/15/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. This Application claims priority to PCT/EP04/14420, filed December 17, 2004, which claims priority to IT MI2003A002531, filed December 19, 2003.

Information Disclosure Statement

2. The Information Disclosure Statement filed June 15, 2006 has been considered by the examiner.

Claim Objections

3. Claim 10 is objected to because of the following informalities: the second to last line should read "at a pressure ...," not "at al pressure ..." Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Faita et al. (US 5,578,388).

Art Unit: 1729

Faita et al. teach a membrane fuel cell delimited by bipolar plates and having anodic and cathodic compartments (abstract, column 1 lines 10-12). The compartments have means for feeding air and fuel (Figure 3). As to the direction of flow, this is relative to the orientation of the fuel cell.

The compartments comprise porous flow distributors of the gaseous reactants (abstract).

As for claim 2, the flow distributors are in both compartments (abstract).

Regarding claim 3, the flow distributors are made of reticulated material, mesh material, or expanded sheets (column 8 lines 62-67; column 9 lines 25-39).

As for claim 8, Faita et al. teach heat exchange within the cell (column 5 lines 64-65). The cooling liquid is provided through calibrated holes in the bipolar plates (column 6 lines 18-20).

With regard to claim 9, Faita et al. teach a stack of cells (Figure 6).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. as applied to claim 1 above, and further in view of Fan et al. (US 6,627,035).

The teachings of Faita et al. as discussed above are incorporated herein.

Faita et al. teach a porous flow distributor in the cathodic compartment but fail to teach the claimed porosity and pressure variation. Faita et al. teach that the void ratio of the flow distributors should be such that the flow of reactants and percolation of water is permitted (column 10 lines 12-16).

Regarding claims 4 and 5, Fan et al. teach a desired pressure variation in the gas diffusion layer, of flow distributor, of less than 12 inch water, or 0.03 bar (Figure 4).

It would be advantageous to minimize pressure variation within the flow distributor such as taught by Fan et al. in the flow distributor of Faita et al., since such minimization would ensure that the air pressure would be even across the cathode electrode, maximizing efficiency of the fuel cell.

As for claims 6 and 7, the skilled artisan would recognize that, since the material of Faita et al. is the same as the claimed material, if the flow pressure variation is minimized such as taught by Faita et al., the claimed porosity would inherently be needed.

Therefore, it would have been obvious to the skilled artisan to have the flow distributor of Faita et al. having the claimed pressure variation and porosity in light of the teachings of Fan et al.

8. Claims 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. as applied to claim 1 above, and further in view of Stute et al. (2003/0232231) and Brambilla et al (WO 00/63992)..

The teachings of Faita et al. as discussed above are incorporated herein.

Regarding claims 10 and 11, Faita et al. fail to teach the pressure at which the air is fed into the cathodic compartment.

Stute et al. teach air pressure fed to a fuel cell at pressure less than 2.5 bar ([0020]). Stute et al. further teach that air pressure is desirably minimized in order to minimize the amount of power required to supply air to the fuel cell without affecting the output of the fuel cell ([0020]).

It would have been obvious to the skilled artisan to minimize the input air pressure of Faita et al. such as taught by Stute et al. for the reasons discussed above.

As for claims 12 and 13, Faita et al. inherently teach these limitations since the skilled artisan will easily recognize that the temperature of a fuel cell is regulated for these reasons by adjusting the temperature of the cooling fluid.

Regarding claims 14 and 15, the relative position of the coolant passages is dependent on the orientation of the fuel cell.

As for claim 16, see the discussion of claim 8 above.

With regard to claim 19, Faita et al. teach the use of pumps to regulate operations in the fuel cell (column 1 line 25).

With further regard to claim 10, Faita et al. in view of Stute et al. fail to teach that the provided air is dry.

Art Unit: 1729

Brambilla et al. teach humidification of air to a bipolar fuel cell having reticulated flow distributors, of bipolar plates, within the cell (page 6 line 25 to page 7 line 4). Thus, the air provided is inherently dry.

As for claims 17, 18, and 20, Brambilla et al. teach that the water flow rate is regulated in order to maximize electrical output (page 17 lines 9-10).

It would have been obvious to the skilled artisan to operate the fuel cell of Faita et al. in the method taught by Brambilla et al. since the method of Brambilla et al. allows for the regulation of the fuel cell output.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1729

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ula C Ruddock/
Supervisory Patent Examiner
Art Unit 1795

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1729

aee